Trutek Fasteners Polska Sp. z o.o.
Al. Krakowska 38, Janki
05-090 Raszyn
NIP: PL 5342256188 REGON: 015722173

Declaration of Performance

Nr: TDA/01/20230426/1488-CPR-1028/W

ETA-22/0153

Revision No:	1
Revision carried out by:	Ben Beardon
Revision date:	26.04.2023

1.	**Unique identyfiaction code of product-type:**	
	TDA Drop in anchor	
2.	**Indended use/es:**	
	Mechanical fasteners to use in non-cracked concrete sizes M12, M12D and M16	
3.	**Manufacturer:**	
	Name:	Trutek Fasteners Polska Sp. z o.o.
	Address:	Al. Krakowska 38, Sękocin Janki 05-090 Raszyn, Polska
4.	**System/s of AVCP:**	
	System:	1
5.	**European Assessment Document:**	
	In accordance with regulation (EU) No 305/2011 on the basis of European Assessment Document EAD 330232-01-0601 „Metal fasteners for use in concrete”	
	European Technical Assessment	ETA-22/0153 of 9th of September 2022
	Issued by:	ITB - Building Research Institute in Warsaw
6.	**Notyfied body/ies:**	
	Name:	Certification Department of ITB - Building Research Institute in Warsaw
	Notified body/ies No:	1488
	No of Certificate of Constancy of Performance:	1488-CPR-1028/W
7.	**Declared performance/es:**	
	Mechanical resistance and stability (BWR 1)	
	Essential chracteristic	**Performance**
	Characteristic tension load values	Annex C1
	Characteristic shear load values	Annex C2
	Displacements under tension and shear load values	Annex C3
	Safety in case of fire (BWR 2)	
	Essential chracteristic	**Performance**
	Reaction to fire	Anchor satisfy requirements for Class A1
	Resistance to fire	Annex C4

The performance of the product identified above is in conformity with the set of declared performance/es. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Janki, 24th of April 2023
Signed for and on behalf of the manufacturer by:

Ben Beardon
Operations Director

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Figure A1 TDA Drop In anchor

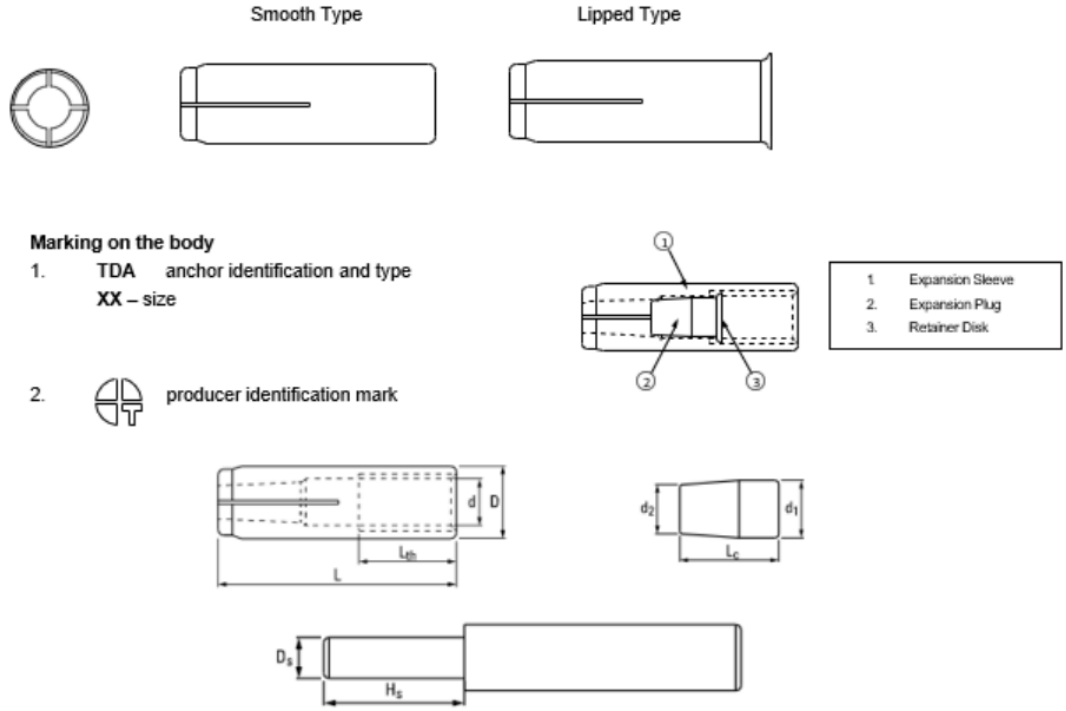

Table A1 Dimensions and Materials

Dimensions					
Anchor size			TDA M12 TDAL M12	TDAD M12 TDADL M12	TDA M16 TDAL M16
Expansion sleeve					
Sleeve Diameter	D	mm	15	16	20
Sleeve length	L	mm	50	50	65
Thread	d		M12	M12	M16
Thread length	L_{th}	mm	22	22	30
Expansion plug					
Plug diameter	d_1	mm	10,15	10,15	13,5
Plug diameter	d_2	mm	8,5	8,5	11,4
Plug length	L_c	mm	20	20	27
Setting punch					
Reduced section diameter	D_s	mm	10,2	10,2	13,5
Reduced section length	H_s	mm	30,0	30,0	36,0
Materials					
Element	Material		Protection		
Expansion sleeve	AISI C1008		Zinc coating ≥ 5 µm		
Expansion plug	Q195 acc. to GB/T 700		Electroplated acc. to EN ISO 4042		

TDA Drop In anchor	**Annex A1**
Product description Characteristics of the product	of European Technical Assessment ETA-22/0153

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Table A2: Setting tool

Size	Unit	M12	M16
ØD1	mm	14,5	18,0
ØD2	mm	10,2	13,5
Ls	mm	30	36

TDA Drop In anchor	**Annex A2**
Product description Setting tool	of European Technical Assessment ETA-22/0153

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Use:

The anchors are intended to be used for anchorages for which requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 of Regulation 305/2011 (EU) shall be fulfilled and failure of anchorages made with these products would compromise the stability of the works, cause risk to human life and/or lead to considerable economic consequences.

Anchorages subject to:

Static and quasi-static loads.

Anchorages with requirements related to resistance to fire

Base material:

- Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum to C50/60 at maximum according to EN 206-1.
- Non-cracked concrete: sizes from M12, M12D and M16.

Temperature range:

- The covered temperature range of the anchorage base concrete during the working life is within the range -40 °C to +80 °C

Use conditions (environmental conditions):

- Dry internal conditions.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Check before placing the anchor to ensure that the strength class of the concrete, in which the anchor is to be placed, is identical with the values which the characteristic loads apply.
- Check of concrete being well compacted, e.g. without significant voids.
- Edge distances and spacings not less than the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.
- Hole shall be clean from drilling dust.
- Anchor installation such that the effective anchorage depth is complied with: the compliance is ensured if the thickness of the fixture is not larger than the maximum values given in Annex B2.
- Anchor expansion by impact on the wedge of the anchor; the anchor is properly set if the wedge is fully dropped in.
- Application of the torque moment given in Annex B2 using a calibrated torque wrench.

Proposed design method:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete works.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be transmitted. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static and quasi-static loads and anchorages with requirements related to resistance to fire are designed in accordance with EN 1992-4:.

TDA Drop In anchor	**Annex B1** of European Technical Assessment ETA-22/0153
Intended use – Specification	

Trutek Fasteners Polska Sp. z o.o.
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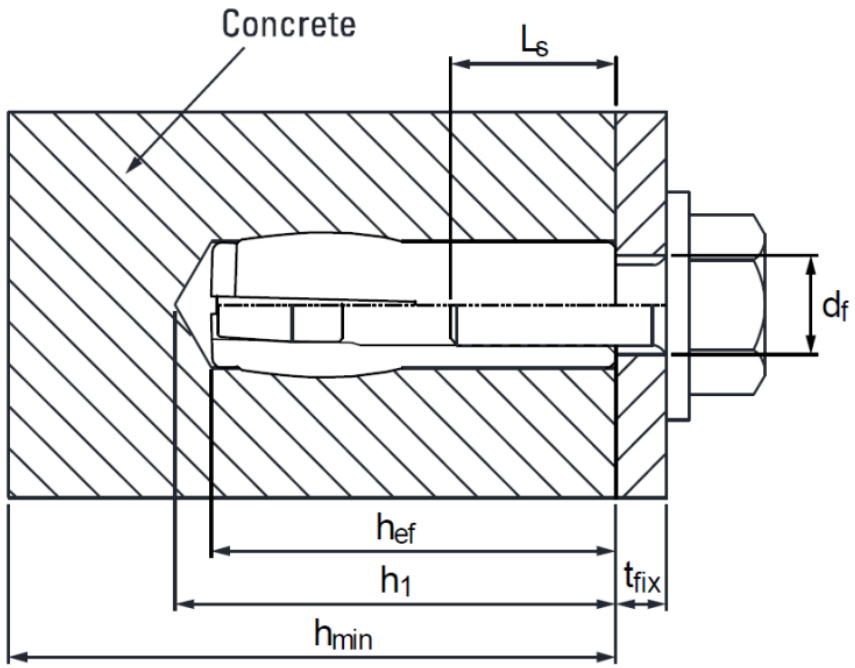
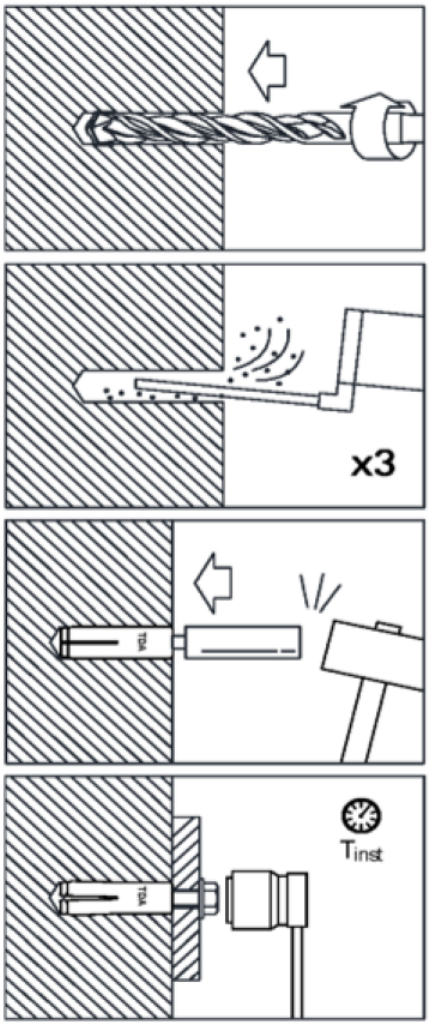
Table B1: Installation parameters



Anchor			TDA and TDA L		
			M12	M12D	M16
Effective anchor depth	h_{ef}	[mm]	50	50	65
Drill hole depth	h_1	[mm]	54	54	70
Drill hole diameter	d_0	[mm]	15	16	20
Max. installation torque	T_{inst}	[mm]	35	35	60
Min. thickness of concrete member	h_{min}	[mm]	100	100	130
Min. screw-in depth	$L_{s,\,min}$	[mm]	12	12	16
Max. screw-in depth	$L_{s,\,max}$	[mm]	22	22	30
Diameter of clearance hole in the fixture	d_f	[mm]	14	14	18
Fastening screws or anchor threaded rods: steel, property class 4.8 / 5.8 / 6.8 / 8.8 according to EN-ISO 898-1					

TDA Drop In anchor	**Annex B2**
Intended use – installation parameters	of European Technical Assessment ETA-22/0153



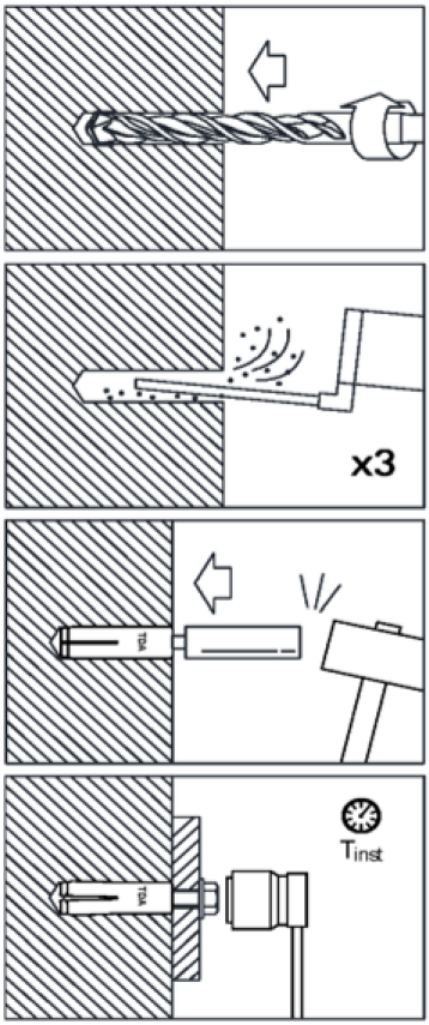
Drill the correct diameter hole to the correct depth with a rotary percussion drilling machine

Blow out the dust 3 times using a hand pump

Place the anchor in the hole and using the correct setting punch hammer the expansion plug fully into the anchor

Attach the fixture by means of a screw or threaded rod and tighten. Do not exceed the maximum torque, T_{inst}

TDA Drop In anchor	**Annex B3** of European Technical Assessment ETA-22/0153
Intended use - installation instruction and tools	



Drill the correct diameter hole to the correct depth with a rotary percussion drilling machine

Blow out the dust 3 times using a hand pump

Place the anchor in the hole and using the correct setting punch hammer the expansion plug fully into the anchor

Attach the fixture by means of a screw or threaded rod and tighten. Do not exceed the maximum torque, T_{inst}

TDA Drop In anchor	**Annex B3** of European Technical Assessment ETA-22/0153
Intended use - installation instruction and tools	

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Table C1: Characteristic tension load values

Anchor				TDA and TDA L		
				M12	M12D	M16
Steel failure						
Steel failure with threaded rod grade 4.8						
Characteristic resistance		$N_{Rk,s}$	[kN]	33,7	33,7	62,8
Partial safety factor		γ_{Ms} 1)	[-]	1,5		
Steel failure with threaded rod grade 5.8						
Characteristic resistance		$N_{Rk,s}$	[kN]	42,2	42,2	78,5
Partial safety factor		γ_{Ms} 1)	[-]	1,5		
Steel failure with threaded rod grade 6.8						
Characteristic resistance		$N_{Rk,s}$	[kN]	50,6	50,6	94,2
Partial safety factor		γ_{Ms} 1)	[-]	1,5		
Steel failure with threaded rod grade 8.8						
Characteristic resistance		$N_{Rk,s}$	[kN]	67,4	67,4	125,6
Partial safety factor		γ_{Ms} 1)	[-]	1,5		
Pull-out failure						
Characteristic resistance in uncracked concrete C20/25		$N_{Rk,p}$	[kN]	2)	2)	2)
Installation factor		γ_{inst}	[-]	1,0	1,0	1,2
Increasing factor	concrete C30/37	ψ_c	[-]	1,22	1,22	1,22
	concrete C40/50		[-]	1,41	1,41	1,41
	concrete C50/60		[-]	1,55	1,55	1,55

1) in absence of other national regulations
2) pull-out failure mode is not decisive

Anchor				TDA and TDA L		
				M12	M12D	M16
Concrete cone failure and splitting failure						
Effective anchorage depth		h_{ef}	[mm]	50	50	65
Factor for uncracked concrete		$k_{ucr,N}$	[-]	11,0	11,0	11,0
Installation factor		γ_{inst}	[-]	1,0	1,0	1,2
Characteristic resistance to splitting		$N^0_{Rk,sp}$	[kN]	1)	1)	1)
Characteristic spacing	concrete cone failure	$s_{cr,N}$	[mm]	300	300	300
	splitting failure	$s_{cr,sp}$	[mm]			
Characteristic edge distance	concrete cone failure	$c_{cr,N}$	[mm]	150	150	150
	splitting failure	$c_{cr,sp}$	[mm]			

1) splitting failure mode is not decisive

TDA Drop In anchor	**Annex C1** of European Technical Assessment ETA-22/0153
Characteristic resistance to tension load in uncracked concrete	

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Table C2: Characteristic shear load values

Anchor			TDA and TDA L		
			M12	M12D	M16
Steel failure without lever arm					
Steel failure with threaded rod grade 4.8					
Characteristic resistance	$N_{Rk,s}$	[kN]	16,9	16,9	31,4
Factor of ductility	k_7	[-]	0,8		
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Steel failure with threaded rod grade 5.8					
Characteristic resistance	$N_{Rk,s}$	[kN]	21,1	21,1	39,3
Factor of ductility	k_7	[-]	0,8		
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Steel failure with threaded rod grade 6.8					
Characteristic resistance	$N_{Rk,s}$	[kN]	25,3	25,3	47,1
Factor of ductility	k_7	[-]	0,8		
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Steel failure with threaded rod grade 8.8					
Characteristic resistance	$N_{Rk,s}$	[kN]	33,7	33,7	62,8
Factor of ductility	k_7	[-]	0,8		
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Steel failure with lever arm					
Characteristic bending moment 4.8	$M^0_{Rk,s}$	[mm]	52,4	52,4	133,3
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Characteristic bending moment 5.8	$M^0_{Rk,s}$	[mm]	65,6	65,6	166,6
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Characteristic bending moment 6.8	$M^0_{Rk,s}$	[mm]	78,7	78,7	199,9
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Characteristic bending moment 8.8	$M^0_{Rk,s}$	[mm]	104,9	104,9	266,6
Partial safety factor	γ_{Ms} 1)	[-]	1,25		
Resistance to pry-out failure					
Pry-out factor	k_8	[-]	1,0	1,0	2,0
Partial safety factor	γ_{Ms} 1)	[-]	1,5		
1) in absence of other national regulations					

Anchor			TDA and TDA L		
			M12	M12D	M16
Resistance to concrete edge failure					
Outside diameter of anchor	d_{nom}	[mm]	15	16	20
Effective length of anchor under shear loads	l_f	[mm]	50	50	65
Partial safety factor	γ_{Mc} 1)	[-]	1,5		
Minimum member thickness	h_{min}	[mm]	100	100	130
Minimum edge distance	c_{min}	[mm]	68	68	88
Minimum spacing	s_{min}	[mm]	68	68	88
1) in absence of other national regulations					

TDA Drop In anchor	**Annex C2** of European Technical Assessment ETA-22/0153
Characteristic resistance to shear load in uncracked concrete	

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Table C3: Displacements under tension and shear load values

Anchor			TDA and TDA L		
			M12	M12D	M16
Displacements under static and quasi-static loading					
Tension and shear load in uncracked concrete C20/25 to C50/60					
Tension load and shear load	$N_{Rk,s}$	[kN]	12,7	12,7	21,1
Short term tension displacement	δ_{No}	[mm]	1,91	2,35	2,09
Long term tension displacement	$\delta_{N\infty}$	[mm]	2,70	3,13	2,87
Short term shear displacement	δ_{Vo}	[mm]	1,91	2,35	2,09
Long term shear displacement	$\delta_{V\infty}$	[mm]	2,87	3,52	3,13

TDA Drop In anchor	Annex C3 of European Technical Assessment ETA-22/0153
Displacements under tension and shear loads	

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Table C4: Characteristic resistance for tension load under fire exposure in uncracked concrete C20/25 to C50/60

Anchor				TDA and TDA L		
				M12	M12D	M16
Steel failure						
Characteristic resistance	R30	$N_{Rk,s,fi}$	[kN]	1,7	1,7	3,1
	R60	$N_{Rk,s,fi}$	[kN]	1,3	1,3	2,4
	R90	$N_{Rk,s,fi}$	[kN]	1,1	1,1	2,0
	R120	$N_{Rk,s,fi}$	[kN]	0,8	0,8	1,6
Pull-out failure						
Characteristic resistance	R30	$N_{Rk,p,fi}$	[kN]	4,8	4,8	9,5
	R60	$N_{Rk,p,fi}$	[kN]	4,8	4,8	9,5
	R90	$N_{Rk,p,fi}$	[kN]	4,8	4,8	9,5
	R120	$N_{Rk,p,fi}$	[kN]	3,8	3,8	7,6
Concrete cone failure						
Characteristic resistance	R30	$N_{Rk,c,fi}$	[kN]	4,5	4,5	8,6
	R60	$N_{Rk,c,fi}$	[kN]	4,5	4,5	8,6
	R90	$N_{Rk,c,fi}$	[kN]	4,5	4,5	8,6
	R120	$N_{Rk,c,fi}$	[kN]	3,6	3,6	8,9
Spacing		$s_{cr,N,fi}$	[mm]	200	200	260
Edge distance		$c_{cr,N,fi}$	[mm]	100	100	130
The design method covers anchors with a fire attack from one side only. In case of fire attack from more than one side, the edge distance shall be ≥ 300mm.						

Table C5: Characteristic resistance for shear loads under fire exposure in uncracked concrete C20/25 to C50/60

Anchor				TDA and TDA L		
				M12	M12D	M16
Steel failure without lever arm						
Characteristic resistance	R30	$V_{Rk,s,fi}$	[kN]	1,7	1,7	3,1
	R60	$V_{Rk,s,fi}$	[kN]	1,3	1,3	2,4
	R90	$V_{Rk,s,fi}$	[kN]	1,1	1,1	2,0
	R120	$V_{Rk,s,fi}$	[kN]	0,8	0,8	1,6
Steel failure with lever arm						
Characteristic bending resistance	R30	$M^0_{Rk,s,fi}$	[Nm]	3,9	3,9	9,3
	R60	$M^0_{Rk,s,fi}$	[Nm]	2,9	2,9	7,0
	R90	$M^0_{Rk,s,fi}$	[Nm]	2,5	2,5	6,0
	R120	$M^0_{Rk,s,fi}$	[Nm]	1,9	1,9	4,6

TDA Drop In anchor	**Annex C4** of European Technical Assessment ETA-22/0153
Characteristic values under fire exposure	